

SPECIFICATION

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CABLE SUPPORT APPARATUS FOR A RAISED FLOOR SYSTEM

Cross Reference to Related Applications

The present disclosure is related to applicant's prior U.S. Patent No. 5,953,870 Raised Floor System and Cable Support Apparatus, filed September 11, 1997, the entire contents of which are hereby incorporated by reference.

Background of Invention

[0001] 1. Technical Field:

[0002] The present disclosure relates to an apparatus used with a raised floor system for providing a supporting structure for a cable management system and more particularly to a cable support apparatus which can be installed on a support pedestal of the raised floor system to provide structural support for the cable management system.

[0003] 2. Description of Related art:

[0004] Raised floor systems have been developed to provide the additional utility space needed in various different conduit or cable intensive environments where the original construction did not provide adequate means of accommodating the vast amount of conduit or cable. For example, probably the most common environment requiring vast amounts of additional protected space is for large computing systems. Such installations were typically made in facilities which simply were not designed to accommodate the vast amount of cable runs required to operate the typical large computer system. Other applications where additional utility space is required include mechanical systems, e.g., heating, ventilating and air conditioning systems.

[0005] A common problem experienced in utilizing raised floor systems is maintaining organization of the various cables, conduits, pipes, etc. which are routed beneath the floor system. One solution to this problem is to provide a cable tray system, cable management system, or cable pathway system beneath the floor panels of the raised floor to contain and direct cables along their respective pathways. An example of such a cable tray system is disclosed in U.S. Patent No. 4,596,095 which issued on June 24, 1986 to Chalfant (the "'095 Chalfant Patent"). The '095 Chalfant Patent features a modular cable tray assembly which is formed from modular sections which include a number of different components all of which must be separately assembled to form the cable tray. For example, the cable tray includes separate straight sections, horizontal bend sections, horizontal tee sections, horizontal cross-intersection sections, as well as splice plates to connect the various components to each other as well as supporting the assembled cable tray above the building floor. Such a cable tray assembly is, therefore, independent of the raised floor system.

[0006] One drawback of such a raised floor and cable support system is the additional labor required to assemble the various components of the separate raised floor and cable support systems. In geographic regions with particularly high labor rates, the cost of erecting such a labor intensive dual system could prove to be cost prohibitive.

[0007] Another drawback of such a system is that a manufacturer's raised floor system typically will only interrelate with and provide support for that manufacturer's cable support system. Thus, consumers are forced to retrofit or choose a less favorable system in one aspect, such as the raised floor system, over another aspect, such as the cable support system. In the alternative, independent cable support systems are procured which significantly add the overall costs because materials have to be procured for a separate independent cable support structure. These additional labor and material costs can significantly increase the overall cost of installing a complete cable support apparatus and raised floor system.

[0008] An alternative solution to supporting cable runs below a raised floor assembly is proposed in U.S. Patent No. 5,548,932 which issued on August 27, 1996 to Mead (the "'932 Mead Patent"). The '932 Mead Patent features a height adjustable cable tray support system which includes a number of separate components which must be

assembled to form the cable support system. Plates which support the cable tray are secured by welding or other methods to the pedestals of the existing raised floor system featured in the '932 Mead Patent. Additionally, support rods are required in the '932 Mead Patent cable tray support system, which support the cable tray on the support plates.

[0009] One disadvantage of such a system is the labor intensive nature of the installation. In particular, each support plate must be separately secured to the floor system pedestals and the support rods and cable tray sections must be installed. This combined with the cost of the material components required for such a system can add significant cost to the installation of the complete system.

[0010] Accordingly, there is a continuing need for an improved cable support apparatus which utilizes a minimum number of components and is easier to adapt with and install on raised floor systems than existing systems. In addition, there is a continuing need for an improved cable support apparatus that can adapt to and interface with a wide variety of cable management systems.

Summary of Invention

[0011] A cable support apparatus for a raised floor system comprising at least one support member wherein each support member defines at least one slot for positioning on a support pedestal of a raised floor system. The support member being structurally supported by the support pedestal and the support member further defining a plurality of holes therein for the positioning and supporting of at least one cable basket. In one preferred embodiment, the at least one support member includes a first member and a second member. Each member defines a slot configured and dimensioned to engage with the pedestal of the support member and defines at least two holes for connecting with cable trays.

[0012] The presently disclosed cable support apparatus, together with attendant advantages, will be best understood by reference to the following detailed description in conjunction with the figures below.

Brief Description of Drawings

[0013] Preferred embodiments of the presently disclosed cable support apparatus are

described herein with reference to the drawings, wherein:

[0014] FIG. 1 is a perspective view of a cable support apparatus installed with a raised floor system and supporting portions of a cable management system;

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[0015] FIG. 2A is a perspective view of the cable support apparatus of FIG. 1 being installed on a support pedestal of one illustrative raised floor system;

[0016] FIG. 2B is a perspective view of the cable support apparatus of FIG. 1 installed on the support pedestal and supporting two cable baskets;

[0017] FIG. 2C is a perspective view of one alternative embodiment of the cable support apparatus of FIG. 1 being installed on the support pedestal; and

[0018] FIG. 2D is a perspective view of an additional embodiment of the cable support apparatus using an attachment mechanism at the support pedestal as constructed in accordance with the present disclosure.

Detailed Description of Preferred Embodiments

[0019] Referring to the drawings in detail, and initially to FIG. 1, the presently disclosed cable support apparatus for a raised floor system 100 (hereinafter referred to as the "support apparatus 100") is shown installed on a plurality of support pedestals 12 of a raised floor system 10. Support apparatus 100 is positioned to provide structural support for one or more portions of a cable management system or cable supporting pathways, such as cable baskets 14.

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[0020] In FIG. 2A, support apparatus 100 includes a first member 110 and a second member 120, with each member 110 and 120 including a pair of through-holes 112 and 122 respectively and a cut-out portion 117 and 127 respectively. When first and second members 110 and 120 are joined together, through-holes 112 and 122 are concentrically aligned and cut-out portion 117 of first member 110 and cut-out portion 127 of second member 120 with support pedestal 12. The inside of hole 115 may have a lining or a bias that enhances its ability to engage support pedestal 12. Hardware common to those skilled in the art, such as threaded bolts 114 and nuts 116, are installed in through holes 112 and 122 to interlock members 110 and 120 together and against support pedestal 12.

[0021] Referring now to FIG. 2B, support apparatus 100 is shown installed onto support pedestal 12 and supporting two cable baskets 14. Threaded bolts 114 connect first member 110, second member 120, and cable basket 14. First member 110 and second member 120 are fabricated from common material, e.g. sheet metal stock and are fully capable of handling typical cable runs similar to that of Patent No. 5,953,870. While support apparatus 100 is shown taking the form of two identical sheet metal members, it can take any geometric form, such as a bar or a pair of bars with a central capture mechanism, that interlocks around support pedestal 12 and provides through holes 112, 122 for attaching cable baskets 14. Support apparatus 100 is preferably configured to attach to support pedestal 12 on threaded stud 48. Support apparatus 100 can be configured to rest on nut 52, or for example, provide vertical support through its locking mechanism with threaded stud 48 or stanchion 13.

[0022] In FIG. 2C, an alternative configuration of support apparatus 100 is shown with a first member 130 and a second member 140 connected together pivotally, for example, by a bolt 136 passing through a pair of coaligned slots 134 formed in an end thereof, thereby providing movement and rotation of first and second members 130 and 140 with respect to one another. In this configuration, first member 130 and second member 140 are installed around support pedestal 12 and then interlocked by coaligning through holes 132 formed near an opposite end of each member 130 and 140 and passing a bolt (not shown) therethrough.

[0023] Referring now to FIG. 2D, an additional alternative configuration of support apparatus 100 is shown with a first member 150 that forms a hole 155 that attaches to pedestal support 12 using a frictional latching or mechanical mechanism 152 that directly engages support pedestal 12. Through holes 152 and 154 are positioned to provide attachment points for cable baskets 14.

[0024] Support apparatus 100 is also configurable to include varying quantities of through holes or alternative attachment mechanisms that support up to four typical cable baskets 14. Additional support apparatus 100 configurations could, for example, support additional quantities of cable baskets 14 configurations such as crossing intersections or "T" type baskets. Alternative configurations of support apparatus 100 that support varying quantities of cable baskets 14 are also envisioned

that include different geometric forms, pivot mechanisms, or a mechanism that captures and locks on support pedestal 12.

[0025] Although illustrative embodiments of the present disclosure have been described herein with reference to the accompanying drawings, it is to be understood that the disclosure is not limited to those precise embodiments, and that various other changes and modifications may be affected therein by one skilled in the art without departing from the scope or spirit of the disclosure. All such changes and modifications are intended to be included within the scope of the disclosure.